

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A method of increasing the concentration of a gas in a first atmosphere and decreasing the concentration of said gas in a second atmosphere, the method comprising
- (A) providing an atmosphere control member (ACM) having first and second surfaces; and
- (B) placing the first atmosphere adjacent the first surface and the second atmosphere adjacent the second surface, the first and second atmospheres containing different proportions of said gas ~~(including the possibility that one of the atmospheres contains substantially none of said gas)~~ ;
- wherein at least one of the first and second atmospheres flows over the surface of the ACM adjacent thereto.
2. (Currently amended) A method according to claim 1 which has at least one of the following characteristics
- (i) one of the first and second atmospheres contains p% by volume of CO₂ , where p is at least 3, ~~e.g. 3-15~~, and the other atmosphere contains less than p%, ~~e.g. 0-5%~~, preferably substantially 0%, by volume of CO₂;
- (ii) ~~(i)~~ one of the first and second atmospheres contains q% by volume of O₂ , where ~~q~~ p is at least 15, ~~e.g. 15-25~~, preferably substantially 21, and the other atmosphere contains less than q%, ~~e.g. 2-15 % or 3-10 %~~, by volume of O₂;
- (iii) one of the atmospheres is an atmosphere within a sealed container containing a respiring biological material; ~~e.g. (a) a packaging atmosphere in direct contact with the respiring biological material, or (b) an intermediate atmosphere in contact with the exteriors of a plurality of sealed containers, each of which includes a~~

~~second ACM and contains a respiring biological material; and the other atmosphere is air or oxygen-enriched air;~~

(iv) the rate at which at least one of the atmospheres flows over the surface of the ACM is changed, ~~discontinuously or continuously (e.g. in response to one or more sensors which measure the concentration of at least one gas in at least one of the atmospheres; before and/or after one or both of the atmospheres have flowed over the ACM), the rate preferably being one or more of~~

~~(a) the volume of the atmosphere passing through a closed chamber including the ACM, and~~

10 ~~(b) the average speed at which the atmospheres flows over the ACM;~~

(v) the ACM is part of a closed chamber and one of the atmospheres is caused to flow through the chamber, and the method has one or more of the following features

15 (a) the atmosphere flows through the chamber at a rate of 5-500, ~~e.g. 10-300 or 20-200 cfm, (0.14-14, e.g. 0.28-8.4 or 0.56-5.6 m³/min),~~

(b) the atmosphere flows through the chamber from at least one inlet to at least one outlet, the inlet and outlet being placed so that a straight line ~~straight-line~~ joining the inlet and the outlet crosses the ACM, the atmosphere preferably flowing at a rate such that the average speed of the atmosphere flowing across the ACM (defined as the volume of the atmosphere passing through the chamber per minute divided by the cross-section of the chamber at right angles to said straight line) is 50 to 5000, ~~e.g. 200 to 2500, inch/min (1.25 to 125, e.g. 5 to 65, m/min),~~

25 (c) the atmosphere flows through the chamber at a rate such that the volume of the atmosphere flowing through the chamber is 0.0025 to 0.25, ~~e.g. 0.005 to 0.1 or 0.005 to 0.04, ft³ per in² (0.06 to 6.4, e.g. 0.12 to 2.5 or 0.12 to 4.0 mm³ per mm²) of ACM exposed to said atmosphere,~~

30 (d) the chamber is a rectangular parallelepiped which comprises two major faces and four minor faces; and in which at least one of the major faces includes an ACM, a first minor face includes at least one inlet for an incoming atmosphere in, and a second minor face opposite the first minor face includes at least one outlet for an outgoing atmosphere, and

(e) the chamber comprises (i) a generally cylindrical surface which comprises the ACM, and (ii) two opposite end faces, one of the end faces including at least one inlet for an incoming atmosphere and the other of the end faces including at least one outlet for an outgoing atmosphere.

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3. (Currently amended) A method according to claim 1 or 2 which has at least one of the following characteristics

- (a) the area of the ACM is at least 100 in^2 (0.06 m^2), ~~particularly at least 1000 in^2 (0.65 m^2), for example an area of 100 to 20,000 in^2 (0.06 to 13 m^2), for~~
10 ~~example 1000 to 10,000 in^2 (0.65 to 6.5 m^2),~~
- (b) one of the atmospheres is the atmosphere within a container having a volume of at least 1 m^3 , ~~particularly at least 40 m^3 , for example a shipping or trucking container, and the other atmosphere is preferably air or oxygen-enriched~~
enriched air,
- (c) the ACM comprises a microporous film having a polymeric coating thereon,
- (d) step (A) comprises providing a first ACM having an a relatively low R ratio, ~~e.g. of 1 to 2.3 or 1.3 to 2.0~~ and a second ACM having a higher R ratio, ~~e.g. of 1.5 to 5.0, or 2.0 to 4.0, or 2.3 to 3.0;~~ and step (B) comprises a step
20 (B1) in which the atmospheres are placed adjacent to the first ACM and a step (B2), which may be before or after step (B1), in which the atmospheres are placed adjacent to the second ACM.

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4. (Original) A container system comprising

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- (1) a sealed container having an exterior surface, and
(2) within the sealed container, a respiring biological material and an inner atmosphere,

the container having an internal atmosphere control member (ACM) which, when gases are passing through the ACM, has

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- (a) a first surface which is in direct contact with the inner atmosphere, and
(b) a second surface which is not in direct contact with the inner atmosphere and is not part of the exterior surface of the container.

5. (Canceled)

6. (Currently amended) A container system according to claim 4 ~~or~~ 5 which has at
5 least one following characteristics

(a) it comprises pressure-generating means for supplying gas to the
second surface of the ACM,

(b) it comprises a metering device for changing the rate at which gas can
be supplied to the second surface of the ACM,

10 (c) it comprises a plurality of sources of different gases and a
corresponding plurality of metering devices for changing the rate at which gas
can be supplied from each of the sources to the second surface of the ACM,

(d) it comprises a plurality of internal ACMs corresponding to the plurality
of separate sources of different gases, each chamber comprising one of the
15 plurality of the internal ACMs, ~~the internal ACMs preferably having different
permeability characteristics,~~

(e) the internal ACM is part of a reusable module which has been
assembled separately from the container, ~~e.g. a module including a rigid
frame, preferably a module which is secured inside a container having at least
20 one rigid wall,~~

(f) the respiring biological material is placed within the container without
any additional packaging or in packaging which has no substantial effect on
the atmosphere in direct contact with the biological material,

25 (g) the respiring biological material is packed in a plurality of ACM-
containing sealed inner containers, and the inner containers are placed within
the sealed container having the internal ACM,

(h) the ACM comprises a microporous film having a polymeric coating
thereon, and

(i) the respiring biological material is bananas.

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7. (Currently amended) A ~~container, for example a shipping or transportation~~
container, which can be sealed and which, when sealed, has an exterior surface and

an inner atmosphere within the sealed container; and which comprises an internal atmosphere control member (ACM) which has

- (a) a first surface which is in direct contact with the inner atmosphere, and
- (b) a second surface which is not in direct contact with the inner atmosphere and is not part of the exterior surface of the container.

8. (Currently amended) A method of storing ~~(including ripening)~~ a respiring biological material which comprises supplying gas to the second surface of the internal ACM of a sealed package obtained by sealing a container as defined in claim 7.

9. (Currently amended) A reusable module which comprises a closed chamber including an ACM, and inlet for gas and an outlet for gas.

10. (Currently amended) A reusable module according to claim 9 which has at least one of the following features

- (a) it comprises a rigid frame,
- (b) the inlet and outlet are placed so that a straight-line joining the inlet and the outlet crosses the ACM,
- (c) the chamber is a rectangular parallelepiped which comprises two major faces and four minor faces; and in which at least one of the major faces includes an ACM, a first minor face includes at least one inlet for incoming gases, and a second minor face opposite the first minor face includes at least one outlet for outgoing gases, and
- (d) the chamber comprises (i) a generally cylindrical surface which comprises the ACM, and (ii) two opposite end faces, one of the end faces including at least one inlet for an incoming atmosphere and the other of the end faces including at least one outlet for an outgoing atmosphere.

11. (Currently amended) An assembly for storing ~~(including ripening)~~ a respiring biological material, the assembly comprising

- (1) an outer sealed gas-permeable container, and

- (2) within the outer sealed container, at least one sealed inner package comprising
- (a) a sealed inner gas-permeable container, and
 - (b) within the sealed inner container, a respiring biological material and a packaging atmosphere around the biological material;
- at least one of the outer container and the inner container including an ACM.

12. (Currently amended) An assembly according to claim 11 which has at least one of the following characteristics

- (a) each of the inner and outer containers includes an ACM,
- (b) at least one of the inner container and the outer container includes a non-selective ACM, ~~for example 1 to 10 holes of 50 to 600 gauge,~~
- (c) the inner container includes a selective ACM and the outer container includes a non-selective ACM, or the outer container includes a selective ACM and the inner container includes a non-selective ACM,
- (d) there are at least 10, ~~e.g. at least 20,~~ substantially identical inner packages,
- (e) the outer container includes an internal ACM, and
- (f) the packaging atmosphere contains 4-12% O₂ and 14-16% CO₂, ~~or 10-15% O₂ and 8-13% CO₂.~~

13. (Currently amended) A method of storing ~~(including ripening)~~ a respiring biological material, the method comprising

- (A) preparing an assembly as defined in claim 11 or 12, and
- (B) maintaining the assembly prepared in step (A) at a temperature and in an ambient atmosphere surrounding the outer container such that the packaging atmosphere has a desired composition.

14-16. (Canceled)

17. (New) A metal shipping container which
- (i) has a capacity of at least 40 m³,

(ii) can be sealed around a respiring biological material, and, when sealed around the respiring biological material, comprises

(a) an exterior surface,

(b) an inner atmosphere within the sealed container which surrounds the biological material, and

(c) an internal atmosphere control member (ACM) which has

(i) a first surface which is in direct contact with the inner atmosphere,

(ii) a second surface which is not in direct contact with the inner atmosphere and is not part of the exterior surface of the container, and

(iii) has a surface area greater than 0.65 m².

18. (New) A container according to claim 17 which comprises pressure-

generating means for supplying gas to the second surface of the ACM and a metering device for changing the rate at which gas can be supplied to the second surface of the ACM.

19. (New) A container according to claim 17 wherein the internal ACM is part of a

module which can be removed from the container and placed in another container or replaced in the same container.

20. (New) A container according to claim 17 wherein the internal ACM is part of a

module which comprises a closed chamber including the ACM, an inlet for gas and an outlet for gas.

21. (New) A container according to claim 20 wherein the inlet and outlet are

placed so that a straight line joining the inlet and the outlet crosses the ACM.

22. (New) A container according to claim 20 wherein the chamber is a rectangular

parallelepiped which comprises two major faces and four minor faces; and in which at least one of the major faces includes an ACM, a first minor face includes at least

one inlet for incoming gases, and a second minor face opposite the first minor face includes at least one outlet for outgoing gases.

23. (New) A container according to claim 20 wherein the chamber comprises (i) a
5 generally cylindrical surface which comprises the ACM, and (ii) two opposite end
faces, one of the end faces including at least one inlet for an incoming atmosphere
and the other of the end faces including at least one outlet for an outgoing
atmosphere.

10 24. (New) A container according to claim 17 wherein the container contains a
respiring biological material which is packed in a plurality of ACM-containing sealed
inner containers.

25. (New) A container according to claim 17 which comprises two or more ACMs,
15 at least one of the ACMs being a selective ACM and at least one of the ACMs being
a nonselective ACM.

26. (New) A container according to claim 25 wherein the selective ACM has an R
ratio of at least 2.5, and the nonselective ACM comprises a single relatively large
20 perforation or a plurality of relatively small perforations.

27. (New) A container according to claim 20 which comprises a first chamber
comprising an ACM having a first R ratio of 1 to 2.3 and a second chamber
comprising an ACM having a second R ratio which is higher in the first R ratio and is
25 1.5 to 5.